

**From:** <John\_Isanhart@fws.gov>  
**To:** "Ingrid Wieser" <ingridwieser@utah.gov>  
**CC:** <kevin\_mcabee@fws.gov>  
**Date:** 2/18/2010 9:25 AM  
**Subject:** Re: Fw: Crandall Iron Discharge Issue  
**Attachments:** pic05436.gif

Forgot to mention that performing other toxicity tests are pretty much out of the question. A subchronic or chronic aquatic (fish) toxicity test would be expensive and time intensive. Toxicity to sensitive life stages (e.g., eggs or juveniles) is of interest too, but probably out of the question. Effects other than death (e.g., tumors, endocrine effects, biochemical alterations) can be detrimental as well, both in the short and long-term. There are some other ways (such as physiologically-based pharmacokinetic / dynamic models) to estimate the longer-term toxicity, especially if we know some of the constituents in the compound. I realize the company is hesitant to release that sort of info though. Once some of the analytical results come back from bench tests, I think we can start weeding out certain concerns/risks. At this point, I'm thinking about the whole kitchen sink.

Final thought for now: How important is Crandall Creek to the ecological function of Huntington Creek? My limited understanding of our (FWS) focus for this "assessment" is T&E and sensitive species and the habitats that support them. Would a slight change (assumption) in Crandall Creek water quality have an adverse impact to Huntington Creek? Are there sensitive life stages of fish or fish food resources in Huntington Creek that exist or rely on Crandall Creek for survival or reproduction? The driver here is exceedence of the water quality standard for Fe (correct?). I think the goal here is to determine if exceeding the water quality standard and adversely impacting the invertebrate community (at least) is worse than changing the water quality of Crandall Creek, and potentially Huntington Creek too, through water treatment. These are examples of big picture questions to determine if this assessment needs to go beyond the screening level. Just some thoughts.

John

"Ingrid Wieser"  
<ingridwieser@utah.gov>  
To  
<John\_Isanhart@fws.gov>  
02/17/2010 06:00 PM cc  
<OGMCOAL@utah.gov>  
Subject  
Re: Fw: Crandall Iron Discharge Issue

Hi John-

I have attached the most recent submittal of the treatment proposal. The very last pages include maps and schematics of the treatment facility. They are using a maelstrom oxidizing unit to aerate the water before it enters the sedimentation pond. The iron is not getting enough settling time, so they are now proposing to add the chemical into the aeration process. The water will be discharging indefinitely; however, we do not know how long the iron will continue to be at elevated levels. The company is now proposing to start adding the chemical at 1mg/L to see if that works. I will talk to the operator and chemical company to see if we can increase the testing factors for the chemical. Since I am not familiar with these, what tests should I ask for (above the 96 hour LC or EC50)? I will also send your last question to the Nalco representatives. Thanks for your input.

Ingrid

>>> 02/17/10 8:10 AM >>>

Ingrid

Is there a description or schematic of the water treatment system? My understanding right now is that there is a sedimentation pond and some chemical (nalclear) that will be added to remove the iron... I need a few more details beyond that. If there is a draft treatment protocol or proposal, I would appreciate seeing it. I'm betting the company knows about the half-life of the chemical in water, sediment, and soil. They should at least know the half-life of the active ingredient(s) and ingredients of potential environmental/health concern. The MSDS says fugacity modeling estimates that somewhere between 10-30% of the chemical will distribute into the water, and essentially the rest of it will partition into the sediment/soil. I'm assuming treatment will be indefinitely, so how much product over time are we talking? This stuff seems to be used frequently (or at least it isn't rare) in the wastewater treatment industry, but I'm unaware if Nalclear has been used in this type of field application.

Like I said before, when we are dealing with sensitive or endangered species, the typical 96 hr LC or EC50 test just doesn't cut it. As a precautionary measure, a safety factor of at least 100-fold below the measured level of toxicity is applied to sensitive species. Still, this only addresses acute toxicity and nothing about subchronic or chronic toxicity. In this case, since so little is known about the toxicity of the flocculent and there are 2 orders of magnitude difference in the acute toxicity of flocculent depending on the exposed species, I would apply at least another safety factor of 10 to address potential chronic toxicity to sensitive fish species.

Last question. This chemical seems to bind metals (at least divalent?) fairly well. Is there any potential for the chemical to change the water chemistry of the creek? In other words, what else could the chemical remove in addition to iron, and could that affect the creek's biological community?

Thanks. Feel free to call me. I know it's a lot to chew on in an email.

John

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Kevin  
McAbee/R6/FWS/DOI

02/11/2010 08:28 AM      To: John Isanhart/R6/FWS/DOI@FWS  
cc

Subject  
Fw: Iron Discharge Issue

I put the attachments in z:mcafee/co river consultations/crandall canyon mine

Kevin

----- Forwarded by Kevin McAbee/R6/FWS/DOI on 02/11/2010 08:22 AM -----

"Ingrid Wieser"

To

02/10/2010 05:15 PM      cc  
"Joe Helfrich"

Subject  
Iron Discharge Issue

I have attached the MSDS sheets, photos, the macroinvertebrate report and the product bulletin. The product has been altered because of everyone's concerns. The new product contains a polyacrylamide which is not carcinogenic. Sorry, it keeps changing so fast, I can hardly keep up. I asked our hydrologist about the questions you had regarding the degradation time of the product. Nalco has no information on that, but ideally, the chemicals should bind with the iron in the sediment pond before they reach the creek. The chemicals that do go down the stream should bind with the soil or anything else and degrade. Please let me know if you have any more questions. I can get some others who know more about the chemical together if you would like. Thanks!

[attachment "NALCLEAR\_7763\_MSDS.pdf" deleted by Kevin McAbee/R6/FWS/DOI]  
[attachment "Product Bulletin\_ 7763.pdf" deleted by Kevin  
McAbee/R6/FWS/DOI] [attachment "streamCleanUp 001.jpg" deleted by Kevin  
McAbee/R6/FWS/DOI] [attachment "streamCleanUp 002.jpg" deleted by Kevin  
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10-1.pdf" deleted by Kevin McAbee/R6/FWS/DOI]  
[attachment "0001.pdf" deleted by John Isanhart/R6/FWS/DOI]